UNIVERSITY OF MINNESOTA
EXTENSION

COVID-19 RESPONSE

The Role of Dairy Farmers in Minnesota's Rural Economy

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KEY SUMMARY POINTS

- Minnesota dairy farms produced 9.8 billion pounds of milk with a value of over $1.9 billion in 2019.[i]
- Total revenue needed to breakeven was $4,055.17 per cow.[ii]
- The average dairy farm generates $1.6 million in economic activity.[iii]
- Dairy farms consistently continue to produce milk during the COVID-19 pandemic.

Introduction

In Minnesota, dairy farmers generate:

- Nearly 10 percent of Minnesota's total agricultural product sales[iv]
- $1.6 million of economic activity per farm
- $47,760 of local and state taxes per farm.[v]

Figure 1. A Minnesotan dairy farm

According to the United States Department of Agriculture (USDA), in 2019, 445,000 Minnesota dairy cows[vi] produced 9.8 billion pounds of milk[vii] with a value of over $1.9 billion.[viii] USDA Census of Agriculture data ranks milk from cows as the fourth largest contributor to Minnesota's agricultural sales, accounting for 9.4 percent of the state's total agricultural products sold.[ix] Stearns[x] and Morrison[xi] counties in central Minnesota lead the state in

dairy production, followed by Winona[xii] County in southeastern Minnesota. Minnesota exports $251.5 million in dairy products, which is just under 5 percent of the nation's total dairy product exports.[xiii]

As of May 2020, Minnesota had 2,456 dairy farms.[xiv] For comparison purposes, in 2010, Minnesota had 4,567 dairy farms[xv], which is a loss of 54 percent of the state's dairy farms in the past decade. Despite this significant reduction in dairy farms, the number of dairy cows has decreased only slightly in Minnesota, from 469,000 head in 2010[xvi] to 445,000 in 2020.[xvii]

COVID-19 has caused unprecedented economic repercussions for many of Minnesota's industries,[xviii] including the state's dairy industry. As restaurants and schools closed due to stay-at-home orders, the dairy supply chain was challenged as there was less demand for wholesale milk cartons, bulk milk bags, and boxed cheese. There was more demand, however, for dairy products packaged for retail settings (for example, gallon jugs and small bags of shredded cheese). This mismatch of supply and demand caused temporary shortages for retail stores and price plunges for dairy farmers. The 2020 price farmers received for milk was as high as $18.02 per cwt pre-pandemic but dropped as low as $10.68 per cwt in late April — a 40 percent reduction in prices for farmers.[xix]

While prices fell significantly, it is important to note that, according to Minnesota Milk, there is no knowledge of milk dumping in Minnesota processing plants due to COVID-19. This has not been the case for dairy processors in nearby states where milk dumping did occur. This caused ramifications for some Minnesota farmers who process their milk in adjacent states. In this report, Extension looked at how dairy farms contribute to their local economies and how their financial situation is a concern not only for agriculture but also to Minnesota's broader economy.

Dairy farmers' breakeven[xx]

Minnesota dairy farmers:

- Need to generate $4,055.17 per cow in revenue to break-even
- Were already, on average, operating at a loss prior to 2019.

While dairies plan for downward economic shifts, farm managers were unprepared for the longevity of depressed milk prices from 2014 to 2018. They were also unsure of how to recuperate from the considerable farm wealth lost in recent years. The second half of 2019 was financially positive for the dairy industry with improved farm gate milk prices received, in addition to state and federal government support payments. In 2019, the average Minnesota dairy farm made $224.07 per cow in profit. If the unpaid labor and management charge is removed, the average cow generated $396.33 in profit. This was a welcome change from 2018 when the average Minnesota dairy farm generated a -$191.55 per cow loss, including unpaid labor and management.

While the average Minnesota dairy farm reported a positive profit in 2019, profit variability existed across farm sizes, with a number of farms reporting a negative profit. Much of the labor required on small- to medium-sized dairy farms is provided by the family and is often unpaid. Including an unpaid labor and management charge provides a proxy for

family living expenses. Many farmers who reported a negative per cow profit had a positive estimate prior to including the unpaid labor and management charge. After several years of depressed milk prices, 2019 data shows that, pre-pandemic, many Minnesota farms were finally operating at a farm level breakeven.

A dairy farm needs $4,055.17 per cow to breakeven on an annual basis. This cost includes all ownership and operating costs, as well as unpaid labor and management. In 2019, 50 percent of this total cost was allocated to feed expenses. Feed costs can comprise 50 to 70 percent of total costs on an annual basis, depending on market prices for these commodities. In general, corn, soybean, and crude oil prices are also falling in response to COVID-19. This will reduce feed and milk hauling costs in the coming months. Furthermore, federal and state financial assistance programs, such as the USDA's Coronavirus Food Assistance Program (CFAP),[xxi] will provide direct financial relief to dairy farmers. However, the milk being marketed now incurred pre-pandemic costs, and not all losses are covered by governmental programs. Because of this, farmers may face losses on current production. In addition, community impacts also tend to lag, as farmers have operating loans and can continue to pay their bills. While the effects of a supply chain interruption may not be immediately felt in the community, they are beginning to occur.

Minnesota dairy farms generate rural economic activity

While dairy producers themselves see little profit or even losses, their spending to raise dairy cows and produce milk generates significant activity in Minnesota's economy. On average, a Minnesota dairy farm has 200 head of dairy cows.[xxii]

An average Minnesota dairy farm spent $882,160 to produce milk in 2019.[xxiii] This spending generated $1.6 million of economic activity in the state.[xxiv] Of this, $384,330 was in labor income. The average dairy farm also supported 11 workers. In the database used for this analysis, one job is one job, regardless if it is full-time, part-time, or seasonal.

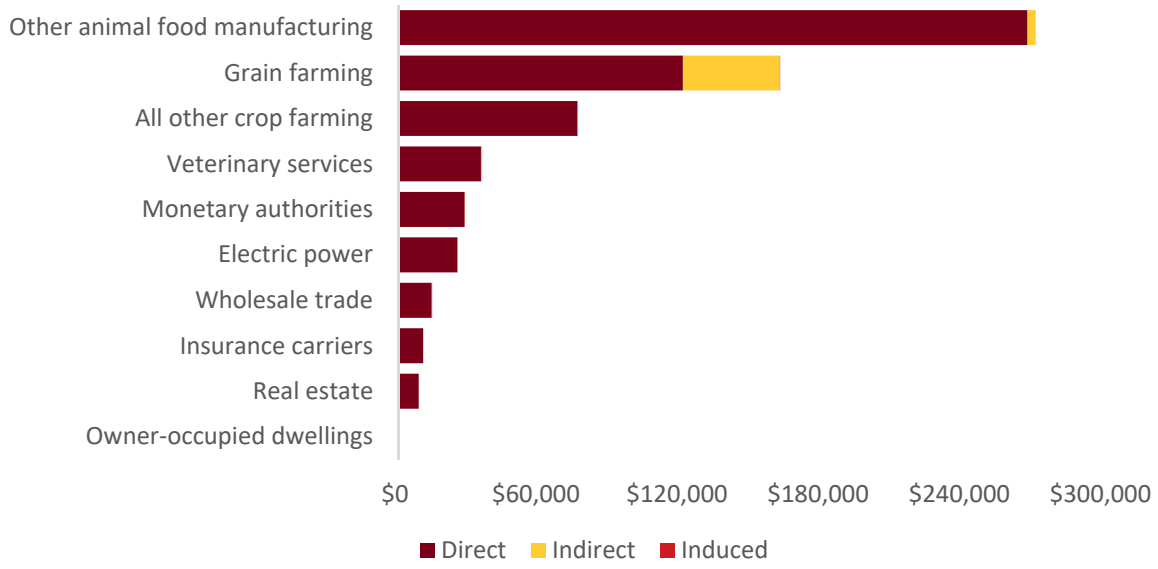
TABLE 1: Economic Contribution of a 200 Cow Dairy Farm[a]

	OUTPUT	EMPLOYMENT	LABOR INCOME	STATE & LOCAL TAXES[b]
DIRECT	$882,160	5	$153,790	
INDIRECT	$401,390	3	$116,420	
INDUCED	$330,080	3	$114,120	
TOTAL	$1,613,630	11[C]	$384,330	$47,760

Note. [a]Economic impact data from IMPLAN, Version 3.1 with Type SAM multipliers; [b]State and local taxes are only available at the total level. [c]In IMPLAN, one job is one job, regardless if it is full-time, part-time, or seasonal.

The top industries affected by dairy farming include animal food manufacturing, grain farming, and all other crop farming (which includes hay and haylage). Feeding a dairy cow is a major expenditure for farmers, and results show the impact this creates at feed mills and on grain farms. Other major impacts are in veterinary services, banking, and utilities (Chart 1).

CHART 1: Top Industries Affected, 200 Cow Dairy Farm, Minnesota



Dairy industry and its role in rural communities

For rural communities, now is the time to have discussions about how to support dairy farms in the community. Understanding the agricultural economy, how it functions together, and the challenges facing producers can help develop local strategies to enhance the dairy industry. This report shows the impact dairying has on Minnesota's economy in general. However, economic impacts are magnified in communities with a strong dairy industry. For example, a county that has high dairy cattle numbers, multiple feed mills, and stores directly supplying dairy farmers will experience stronger economic impacts. In these counties, gathering dairy farmers, suppliers, other stakeholders, and community decision makers together to further explore industry linkages can be valuable.

For more information on Extension's community economics work, visit extension.umn.edu/community-development. For questions on this report, please contact Megan Roberts at meganr@umn.edu.

Notes on Data Sources

FINBIN: FINBIN is a farm financial database. The site provides benchmark financial information for farm producers, educators, lenders, and other agricultural professionals. The database summarizes actual farm data from agricultural producers who use FINPACK for farm business analysis. Data on revenues, expenditures, and other metrics is available. Learn more at finbin.umn.edu.

IMPLAN: IMPLAN is an input-output modeling system. Input-output models trace the flow of goods and services throughout an economy. The model can then quantify how a change in one sector of the economy will affect other sectors. Indirect effects are business-to-business effects, or effects generated when the industry affected makes purchases from its suppliers. Induced effects are consumer-to-business effects, or effects generated when the workers of an industry use their income to make purchases. Learn more at implan.com.

NASS and AMS: NASS is the National Agricultural Statistics Service of the United States Department of Agriculture (USDA). NASS performs hundreds of phone and written surveys each year, covering a wide range of U.S. agricultural topics with a strong emphasis on farm-related statistics. Once every five years, NASS conducts a comprehensive survey of U.S. agricultural producers, providing detailed information on size and composition of U.S. farms at the county, state, and national level. AMS is the Agricultural Marketing Service of the USDA. In addition to helping facilitate domestic and international marketing opportunities for U.S. agricultural producers, AMS compiles detailed daily, weekly, monthly, and annual statistical reports on market sales, including hog slaughter. Learn more at nass.usda.gov and ams.usda.gov.

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i. https://quickstats.nass.usda.gov/ “Dairy, Minnesota, 2019”

ii. http://finbin.umn.edu “Livestock Enterprise, Dairy Per Cow, Minnesota, 2019”

iii. IMPLAN analysis

iv. https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/Rankings_of_Market_Value/Minnesota/

v. IMPLAN analysis

vi. 445,000 is an average total count of milk cows at the conclusion of 2019; heifers and calves are not included. For more information visit https://www.nass.usda.gov/Statistics_by_State/Minnesota/Publications/Livestock_Press_Releases/2020/MN-Milk-Production-02-20.pdf.

vii. Dairy farms measure milk in hundredweights (abbreviated as cwt), and the USDA measures it in pounds. Most consumers are buying milk in gallons not pounds. There are 8.6 pounds per gallon. This means the 9.8 billion pounds of milk produced in Minnesota in 2019 is the equivalent of 1.14 billion gallons of milk.

viii. https://quickstats.nass.usda.gov/ “Dairy, Minnesota, 2019”

ix. https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/Rankings_of_Market_Value/Minnesota/

x.https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/County_Profiles/Minnesota/cp27145.pdf

xi.https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/County_Profiles/Minnesota/cp27097.pdf

xii.https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/County_Profiles/Minnesota/cp27169.pdf

xiii. https://www.ers.usda.gov/data-products/state-export-data/

xiv. https://www.mda.state.mn.us/food-feed/dairy-minnesota "Monthly Dairy Farm Report"

xv. https://www.leg.state.mn.us/docs/2010/other/101335.pdf

xvi. https://www.nass.usda.gov/Statistics_by_State/ Minnesota/Publications/Livestock_Press_Releases/2020/MN-Milk-Production-02-20.pdf

xvii. https://www.leg.state.mn.us/docs/2010/other/101335.pdf

xviii. https://extension.umn.edu/community-research/minnesotas-economy-and-covid-19

xix. https://www.cmegroup.com/trading/agricultural/dairy/class-iii-milk.html, Class III CMEGroup June 2020 Futures used as proxy for farm gate price: high (Jan 23) and low (Apr 22) June Class III future prices are cited.

xx. All data in breakeven section is from http://finbin.umn.edu

xxi. https://www.farmers.gov/sites/default/files/documents/FSA_CFAP_Dairy_Fact-Sheet.pdf

xxii. Current number of dairy cattle divided by number of dairy farms.

xxiii. Dairy expenditure data derived from http://finbin.umn.edu.

xxiii. All data in the rest of this section is from IMPLAN analysis.